**ITCS-6100 Group 1 Project Deliverable 1**

**1.A**. **Members**

* Joseph Mauney
* Hunter Sandlin
* Cody Spencer
* Allyson Vasquez
* Jay Yadav

**1.B. Communication Plan**

* Members will communicate through Discord to set up times and track progress of actions.
* Meetings will be held on Zoom as needed to review deliverables and coordinate additional work.
* Repository created for project is found in GitHub at URL: <https://github.com/cspenc46/ITCS_6100_Group1_Project>

**2. Selection of Data**

The data that will be used in this group project is released through the Open Energy Data Initiative by the Department of Energy. It is managed by the National Renewable Energy Laboratory.

Dataset found here: <https://registry.opendata.aws/oedi-data-lake/> … then here: <https://data.openei.org/s3_viewer?bucket=oedi-data-lake\>

Documentation on OEDI Data Lake found here: <https://github.com/openEDI/documentation/>

Tools on OEDI Data Lake found here:

Dashboard “Tracking the Sun”: <https://emp.lbl.gov/tracking-sun-tool>

NSRDB Data Viewer: <https://maps.nrel.gov/nsrdb-viewer/?aL=0&bL=groad&cE=0&lR=0&mC=31.653381399664%2C-3.1640625&zL=2>

**3. Business Problem or Opportunity**

ELO Inc. recently developed a revolutionary energy transmission and storage solution technology that allows for electricity to be transmitted wirelessly. This technology is limitless: it can be transmitted across long ranges and there is no limit to the amount of power that can be transferred. This transfer “beam” operates at frequencies that are not harmful to human health, which means the “beam” could theoretically travel through populated areas without any consequences. According to Global Energy Statistics, the world’s total energy consumption in 2020 amount to 16.7 Terawatts of power. It is initially estimated that an area equivalent to 43000 square miles covered with solar panels would be able to satisfy the world’s power demand at its current consumption rate. With ELO’s remarkable technological breakthrough, they quickly realize they could build a solar panel infrastructure with enough surface area to immediately switch all energy production in the world to a renewable source. The CEO of ELO Inc. has recruited Group 1 to determine the optimal location of this solar panel field. Project “Mr. Blue Sky”, eloquently named by the ELO CEO, seeks to minimize CAPEX spend while maximizing power.

**4. Research Objectives and Question(s)**

The objective that Group 1 will work to achieve is to find the optimal location for a solar panel field that receives the most, consistent sunlight. By determining this location and expanding it over the required square mileage needed to power the world, ELO will reduce capital spend and maximize returns for their stakeholders. Additionally, data should be trended over time to ensure that the location chosen is not slowly succumbing to more cloud cover and will remain sunny for the next 25 years, until the patent ELO has on their technology expires.

Sources:

<https://yearbook.enerdata.net/total-energy/world-consumption-statistics.html>

<https://medium.com/predict/how-far-are-we-from-wireless-electricity-94dbd48529a4>